

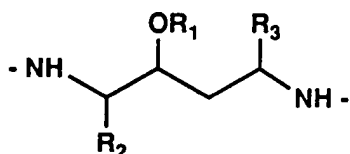
CLAIMS

What is claimed is:

1. A compound of the formula:



wherein X is



wherein R<sub>1</sub> is hydrogen, loweralkyl, alkoxyalkyl, thioalkoxyalkyl or alkoxyalkoxyalkyl and R<sub>2</sub> and R<sub>3</sub> are independently -((R<sub>0</sub>)<sub>d</sub>-R<sub>5</sub>) wherein at each occurrence R<sub>0</sub> is independently selected from -(CH<sub>2</sub>R<sub>4</sub>)- and loweralkenylene wherein at each occurrence d is independently selected from 0 and 1, at each occurrence R<sub>4</sub> is independently selected from -S-, -O-, -NH-, -N(loweralkyl)-, -S(O)-, -S(O)<sub>2</sub>- and -CH<sub>2</sub>- and at each occurrence R<sub>5</sub> and R<sub>5</sub>\* are independently selected from

- (i) loweralkyl,
- (ii) aryl,
- (iii) thioalkoxyalkyl
- (iv) (aryl)alkyl,
- (v) cycloalkyl,
- (vi) cycloalkylalkyl,
- (vii) hydroxyalkyl,
- (viii) alkoxyalkyl,
- (ix) aryloxyalkyl,
- (x) haloalkyl,

- (xi) carboxyalkyl,
- (xii) alkoxycarbonylalkyl,
- (xiii) aminoalkyl,
- (xiv) (N-protected) aminoalkyl,
- (xv) alkylaminoalkyl,
- (xvi) ((N-protected) (alkyl) amino) alkyl,
- (xvii) dialkylaminoalkyl,
- (xviii) guanidinoalkyl,
- (xix) loweralkenyl,
- (xx) heterocyclic,
- (xxi) (heterocyclic) alkyl,
- (xxii) hydrogen,
- (xxiii) arylthioalkyl,
- (xxiv) arylsulfonylalkyl,
- (xxv) (heterocyclic) thioalkyl,
- (xxvi) (heterocyclic) sulfonylalkyl,
- (xxvii) (heterocyclic) oxyalkyl,
- (xxviii) arylalkoxyalkyl,
- (xxix) arylthioalkoxyalkyl,
- (xxx) arylalkylsulfonylalkyl,
- (xxxi) (heterocyclic) alkoxyalkyl,
- (xxxii) (heterocyclic) thioalkoxyalkyl,
- (xxxiii) (heterocyclic) alkylsulfonylalkyl,
- (xxxiv) cycloalkyloxyalkyl,
- (xxxv) cycloalkylthioalkyl,
- (xxxvi) cycloalkylsulfonylalkyl,
- (xxxvii) cycloalkylalkoxyalkyl,
- xxxviii cycloalkylthioalkoxyalkyl,
- (xxxix) cycloalkylalkylsulfonylalkyl,
- (xl) aminocarbonyl,
- (xli) alkylaminocarbonyl,
- (xlii) dialkylaminocarbonyl,
- (xliii) aroylalkyl,

- (xliv) (heterocyclic)carbonylalkyl,
- (xlv) polyhydroxyalkyl,
- (xlvi) aminocarbonylalkyl,
- (xlvii) alkylaminocarbonylalkyl and
- (xlviii) dialkylaminocarbonylalkyl;

A and B are independently selected from

(1) Z-W-

wherein at each occurrence W is absent or represents a peptide chain containing 1-3 amino acids wherein and at each occurrence Z is  $R_6-(C(R_5^*)(R_5))_e-(C(T))_f-(C(R_5^*)(R_5))_g-(U)_i-(C(R_5^*)(R_5))_j-C(T)_f-$  wherein at each occurrence  $R_6-(C(R_5^*)(R_5))_e-(C(T))_f-(C(R_5^*)(R_5))_g-(U)_i-(C(R_5^*)(R_5))_j-C(T)_f-$  is bonded to the amino terminus of the peptide chain, at each occurrence T is independently selected from O and S, at each occurrence  $R_5$  and  $R_5^*$  are independently defined as above or  $R_5$ ,  $R_5^*$  and the carbon atom to which they are bonded taken together form a carbocyclic ring of from 3 to 8 carbon atoms which can be optionally substituted with a loweralkyl group or when e, g or j is 2 or more,  $R_5$  and  $R_5^*$  on adjacent carbon atoms when taken together form a carbocyclic ring of from 3 to 8 carbon atoms which can be optionally substituted with a loweralkyl group, at each occurrence U is independently selected from O, S and  $-N(R_5)-$  wherein  $R_5$  is independently defined as above, at each occurrence e is independently selected from 0, 1, 2 and 3, at each occurrence f is independently selected from 0 and 1, at each occurrence g is independently selected from 0, 1, 2 and 3, at each occurrence i is independently selected from 0 and 1, at each occurrence j is independently selected from 0, 1, 2 and 3, and at each occurrence  $R_6$  is independently selected from

(a)  $R_7-(R_9)_k$ - wherein at each occurrence  $R_9$  is independently selected from  $N(R_7)$ , O and S and at each occurrence  $k$  is independently selected from 0 and 1,

(b)  $(R_7)_2N-O-$ ,

(c)  $R_7S(O)_2N(R_5)-$  and

(d)  $R_{170}R_{171}CH=CH-$  wherein at each occurrence  $R_{171}$  is absent, O, S, NH or  $-N(alkyl)-$  and at each occurrence  $R_{170}$  is aryl or heterocyclic and wherein at each occurrence  $R_5$  is independently defined as above and at each occurrence  $R_7$  is independently selected from:

- (i) hydrogen,
- (ii) loweralkyl,
- (iii) cycloalkyl,
- (iv) aryl,
- (v) arylalkyl,
- (vi) (aryl)alkoxyalkyl,
- (vii) aminoalkyl,
- (viii) N-protected-aminoalkyl,
- (ix) alkylaminoalkyl,
- (x) (N-protected) (alkyl)aminoalkyl,
- (xi) dialkylaminoalkyl,
- (xii) carboxyalkoxyalkyl,
- (xiii) (alkoxycarbonyl)alkoxyalkyl,
- (xiv) carboxyalkyl,
- (xv) alkoxycarbonylalkyl,
- (xvi) (amino)carboxyalkyl,
- (xvii) ((N-protected) amino)carboxyalkyl,
- (xviii) (alkylamino)carboxyalkyl,
- (xix) ((N-protected) alkylamino)carboxy-alkyl,
- (xx) (dialkylamino)carboxyalkyl,
- (xxi) (amino)alkoxycarbonylalkyl,

- (xxii) ((N-protected) amino)alkoxycarbonyl-alkyl,
- (xxiii) (alkylamino)alkoxycarbonylalkyl,
- (xxiv) ((N-protected) alkylamino)alkoxy-carbonylalkyl,
- (xxv) (dialkylamino)alkoxycarbonylalkyl,
- (xxvi) aminocycloalkyl,
- (xxvii) alkoxyalkyl,
- (xxviii) (polyalkoxy)alkyl,
- (xxix) heterocyclic,
- (xxx) (heterocyclic)alkyl,
- (xxxi) (hydroxyamino)alkyl,
- (xxxii) (alkoxyamino)alkyl,
- (xxxiii) N-protecting group,
- (xxxiv) cycloalkylalkyl,
- (xxxv) loweralkenyl,
- (xxxvi) hydroxyalkyl,
- (xxxvii) dihydroxyalkyl,
- (xxxviii) (alkoxy) (alkyl) aminoalkyl,
- (xxxix) alkylaminocycloalkyl,
- (lx) dialkylaminocycloalkyl,
- (lxi) polyhydroxyalkyl,
- (lxii) aryloxyalkyl,
- (lxiii) arylthioalkyl,
- (lxiv) arylsulfonylalkyl,
- (lxv) (heterocyclic)thioalkyl,
- (lxvi) (heterocyclic)sulfonylalkyl,
- (lxvii) (heterocyclic)oxyalkyl,
- (lxviii) arylalkoxyalkyl,
- (lxix) arylthioalkoxyalkyl,
- (lxx) arylalkylsulfonylalkyl,
- (lxxi) (heterocyclic)alkoxyalkyl,
- (lxxii) (heterocyclic)thioalkoxyalkyl,

- (lxxiii) (heterocyclic) alkylsulfonylalkyl,
- (lxxiv) cycloalkyloxyalkyl,
- (lxxv) cycloalkylthioalkyl,
- (lxxvi) cycloalkylsulfonylalkyl,
- (lxxvii) cycloalkylalkoxyalkyl,
- (lxxviii) cycloalkylthioalkoxyalkyl,
- (lxxix) cycloalkylalkylsulfonylalkyl,
- (lxxx) aroylalkyl,
- (lxxxi) (heterocyclic) carbonylalkyl,
- (lxxxii) (aryl) aminoalkyl,
- (lxxxiii) (aryl) (alkyl) aminoalkyl,
- (lxxxiv) (arylalkyl) aminoalkyl,
- (lxxxv) (arylalkyl) (alkyl) aminoalkyl,
- (lxxxvi) (heterocyclic) aminoalkyl,
- (lxxxvii) (heterocyclic) (alkyl) aminoalkyl,
- (lxxxviii) ((heterocyclic) alkyl) aminoalkyl,
- (lxxxix) ((heterocyclic) alkyl) alkylaminoalkyl
- (xc) (alkoxyalkyl) aminoalkyl,
- (xci) thioalkoxyalkyl,
- (xcii) mercaptoalkyl,
- (xciii) aminocarbonylalkyl,
- (xciv) alkylaminocarbonylalkyl and
- (xcv) dialkylaminocarbonylalkyl;

and

(2) Z'-W'-

wherein at each occurrence W' is absent or represents a peptide chain containing 1-3 amino acids and wherein at each occurrence Z' is

$R_6-(C(R_5^*)(R_5))_e-(S(O))_m-(C(R_5^*)(R_5))_g-(U)_i-(C(R_5^*)(R_5))_j-C(T)_i-$

wherein  $R_6-(C(R_5^*)(R_5))_e-(S(O))_m-(C(R_5^*)(R_5))_g-(U)_i-$

$(C(R_5^*)(R_5))_j-C(T)_i-$  is bonded to the amino terminus of the peptide chain wherein at each occurrence T is independently

selected from O and S, at each occurrence  $R_5$  and  $R_{5*}$  are independently defined as above or  $R_5$ ,  $R_{5*}$  and the carbon atom to which they are bonded taken together form a carbocyclic ring of from 3 to 8 carbon atoms which can be optionally substituted with a loweralkyl group or when e, g or j is 2 or more,  $R_5$  and  $R_{5*}$  on adjacent carbon atoms when taken together form a carbocyclic ring of from 3 to 8 carbon atoms which can be optionally substituted with a loweralkyl group, at each occurrence U is independently selected from O, S and  $-N(R_5)-$  wherein  $R_5$  is independently defined as above, at each occurrence e is independently selected from 0, 1, 2 and 3, at each occurrence m is independently selected from 1 and 2, at each occurrence g is independently selected from 0, 1, 2 and 3, at each occurrence i is independently selected from 0 and 1, at each occurrence j is independently selected from 0, 1, 2 and 3, and at each occurrence  $R_6$  is independently defined as above; or a pharmaceutically acceptable salt, ester or prodrug thereof.

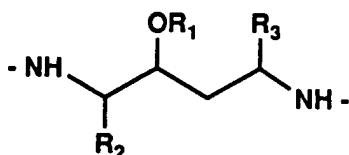
2. The compound of Claim 1 wherein  $R_1$  is hydrogen and  $R_2$  and  $R_3$  are arylalkyl and wherein A is  $R_6-C(O)-NH-CH(R_5)-C(O)-$  wherein  $R_5$  is arylalkyl and  $R_6$  is  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl and B is  $-C(O)-R_6$  wherein  $R_6$  is independently  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl.

3. The compound of Claim 1 wherein  $R_1$  is hydrogen and  $R_2$  and  $R_3$  are arylalkyl and wherein B is  $R_6-C(O)-NH-CH(R_5)-C(O)-$  wherein  $R_5$  is arylalkyl and  $R_6$  is  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl and A is  $-C(O)-R_6$  wherein  $R_6$  is independently  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl.

4. A compound of the formula:



wherein X is



wherein  $R_1$  is hydrogen, loweralkyl, alkoxyalkyl, thioalkoxyalkyl or alkoxyalkoxyalkyl and  $R_2$  and  $R_3$  are independently  $-(R_0)_d-R_5$  wherein at each occurrence  $R_0$  is independently selected from  $-(CH_2R_4)-$  and loweralkenylene



wherein at each occurrence d is independently selected from 0 and 1, at each occurrence R<sub>4</sub> is independently selected from -S-, -O-, -NH-,

-N(loweralkyl)-, -S(O)-, -S(O)<sub>2</sub>- and -CH<sub>2</sub>- and at each occurrence R<sub>5</sub> and R<sub>5</sub>\* are independently selected from

- (i) loweralkyl,
- (ii) aryl,
- (iii) thioalkoxyalkyl
- (iv) (aryl)alkyl,
- (v) cycloalkyl,
- (vi) cycloalkylalkyl,
- (vii) hydroxyalkyl,
- (viii) alkoxyalkyl,
- (ix) aryloxyalkyl,
- (x) haloalkyl,
- (xi) carboxyalkyl,
- (xii) alkoxycarbonylalkyl,
- (xiii) aminoalkyl,
- (xiv) (N-protected)aminoalkyl,
- (xv) alkylaminoalkyl,
- (xvi) ((N-protected) (alkyl)amino) alkyl,
- (xvii) dialkylaminoalkyl,
- (xviii) guanidinoalkyl,
- (xix) loweralkenyl,
- (xx) heterocyclic,
- (xxi) (heterocyclic)alkyl,
- (xxii) hydrogen,
- (xxiii) arylthioalkyl,
- (xxiv) arylsulfonylalkyl,
- (xxv) (heterocyclic)thioalkyl,
- (xxvi) (heterocyclic)sulfonylalkyl,
- (xxvii) (heterocyclic)oxyalkyl,
- (xxviii) arylalkoxyalkyl,

- (xxix) arylthioalkoxyalkyl,
- (xxx) arylalkylsulfonylalkyl,
- (xxxi) (heterocyclic)alkoxyalkyl,
- (xxxii) (heterocyclic)thioalkoxyalkyl,
- (xxxiii) (heterocyclic)alkylsulfonylalkyl,
- (xxxiv) cycloalkyloxyalkyl,
- (xxxv) cycloalkylthioalkyl,
- (xxxvi) cycloalkylsulfonylalkyl,
- (xxxvii) cycloalkylalkoxyalkyl,
- xxxviii cycloalkylthioalkoxyalkyl,
- (xxxix) cycloalkylalkylsulfonylalkyl,
- (xl) aminocarbonyl,
- (xli) alkylaminocarbonyl,
- (xlii) dialkylaminocarbonyl,
- (xliii) aroylalkyl,
- (xliv) (heterocyclic)carbonylalkyl,
- (xlv) polyhydroxyalkyl,
- (xlvi) aminocarbonylalkyl,
- (xlvii) alkylaminocarbonylalkyl and
- (xlviii) dialkylaminocarbonylalkyl;

A and B are independently selected from  
 Z- wherein at each occurrence Z is  $R_6-(C(R_5^*)(R_5))_e-(C(T))_f-$   
 $(C(R_5^*)(R_5))_g-(U)_i-(C(R_5^*)(R_5))_j-C(T)_f-$  wherein at each  
 occurrence T is independently selected from O and S, at each  
 occurrence  $R_5$  and  $R_5^*$  are independently defined as above or  
 $R_5$ ,  $R_5^*$  and the carbon atom to which they are bonded taken  
 together form a carbocyclic ring of from 3 to 8 carbon atoms  
 which can be optionally substituted with a loweralkyl group  
 or when e, g or j is 2 or more,  $R_5$  and  $R_5^*$  on adjacent carbon  
 atoms when taken together form a carbocyclic ring of from 3  
 to 8 carbon atoms which can be optionally substituted with a  
 loweralkyl group, at each occurrence U is independently

selected from O, S and -N(R<sub>5</sub>)- wherein R<sub>5</sub> is independently defined as above, at each occurrence e is independently selected from 0, 1, 2 and 3, at each occurrence f is independently selected from 0 and 1, at each occurrence g is independently selected from 0, 1, 2 and 3, at each occurrence i is independently selected from 0 and 1, at each occurrence j is independently selected from 0, 1, 2 and 3, and at each occurrence R<sub>6</sub> is independently selected from

(a) R<sub>7</sub>-(R<sub>9</sub>)<sub>k</sub>- wherein at each occurrence R<sub>9</sub> is independently selected from N(R<sub>7</sub>), O and S and at each occurrence k is independently selected from 0 and 1,

(b) (R<sub>7</sub>)<sub>2</sub>N-O-,

(c) R<sub>7</sub>S(O)<sub>2</sub>N(R<sub>5</sub>)- and

(d) R<sub>170</sub>R<sub>171</sub>CH=CH- wherein at each occurrence R<sub>171</sub> is absent, O, S, NH or -N(alkyl)- and at each occurrence R<sub>170</sub> is aryl or heterocyclic and wherein at each occurrence R<sub>5</sub> is independently defined as above and at each occurrence R<sub>7</sub> is independently selected from:

- (i) hydrogen,
- (ii) loweralkyl,
- (iii) cycloalkyl,
- (iv) aryl,
- (v) arylalkyl,
- (vi) (aryl)alkoxyalkyl,
- (vii) aminoalkyl,
- (viii) N-protected-aminoalkyl,
- (ix) alkylaminoalkyl,
- (x) (N-protected) (alkyl)aminoalkyl,
- (xi) dialkylaminoalkyl,
- (xii) carboxyalkoxyalkyl,
- (xiii) (alkoxycarbonyl)alkoxyalkyl,
- (xiv) carboxyalkyl,

- (xv) alkoxycarbonylalkyl,
- (xvi) (amino) carboxyalkyl,
- (xvii) ((N-protected) amino) carboxyalkyl,
- (xviii) (alkylamino) carboxyalkyl,
- (xix) ((N-protected) alkylamino) carboxy-  
alkyl,
- (xx) (dialkylamino) carboxyalkyl,
- (xxi) (amino) alkoxycarbonylalkyl,
- (xxii) ((N-protected) amino) alkoxycarbonyl-  
alkyl,
- (xxiii) (alkylamino) alkoxycarbonylalkyl,
- (xxiv) ((N-protected) alkylamino) alkoxy-  
carbonylalkyl,
- (xxv) (dialkylamino) alkoxycarbonylalkyl,
- (xxvi) aminocycloalkyl,
- (xxvii) alkoxyalkyl,
- (xxviii) (polyalkoxy) alkyl,
- (xxix) heterocyclic,
- (xxx) (heterocyclic) alkyl,
- (xxxi) (hydroxyamino) alkyl,
- (xxxii) (alkoxyamino) alkyl,
- (xxxiii) N-protecting group,
- (xxxiv) cycloalkylalkyl,
- (xxxv) loweralkenyl,
- (xxxvi) hydroxyalkyl,
- (xxxvii) dihydroxyalkyl,
- (xxxviii) (alkoxy) (alkyl) aminoalkyl,
- (xxxix) alkylaminocycloalkyl,
- (lx) dialkylaminocycloalkyl,
- (lxi) polyhydroxyalkyl,
- (lxii) aryloxyalkyl,
- (lxiii) arylthioalkyl,
- (lxiv) arylsulfonylalkyl,

- (lxv) (heterocyclic)thioalkyl,
- (lxvi) (heterocyclic)sulfonylalkyl,
- (lxvii) (heterocyclic)oxyalkyl,
- (lxviii) arylalkoxyalkyl,
- (lxix) arylthioalkoxyalkyl,
- (lxx) arylalkylsulfonylalkyl,
- (lxxi) (heterocyclic)alkoxyalkyl,
- (lxxii) (heterocyclic)thioalkoxyalkyl,
- (lxxiii) (heterocyclic)alkylsulfonyalkyl,
- (lxxiv) cycloalkyloxyalkyl,
- (lxxv) cycloalkylthioalkyl,
- (lxxvi) cycloalkylsulfonylalkyl,
- (lxxvii) cycloalkylalkoxyalkyl,
- (lxxviii) cycloalkylthioalkoxyalkyl,
- (lxxix) cycloalkylalkylsulfonylalkyl,
- (lxxx) aroylalkyl,
- (lxxxi) (heterocyclic)carbonylalkyl,
- (lxxxii) (aryl)aminoalkyl,
- (lxxxiii) (aryl)(alkyl)aminoalkyl,
- (lxxxiv) (arylalkyl)aminoalkyl,
- (lxxxv) (arylalkyl)(alkyl)aminoalkyl,
- (lxxxvi) (heterocyclic)aminoalkyl,
- (lxxxvii) (heterocyclic)(alkyl)aminoalkyl,
- (lxxxviii) ((heterocyclic)alkyl)aminoalkyl,
- (lxxxix) ((heterocyclic)alkyl)alkylaminoalkyl
- (xc) (alkoxyalkyl)aminoalkyl,
- (xci) thioalkoxyalkyl,
- (xcii) mercaptoalkyl,
- (xciii) aminocarbonylalkyl,
- (xciv) alkylaminocarbonylalkyl and
- (xcv) dialkylaminocarbonylalkyl;

or a pharmaceutically acceptable salt, ester or prodrug thereof.

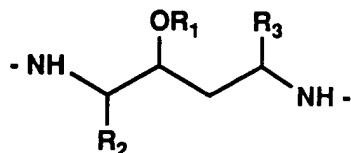
5. The compound of Claim 4 wherein  $R_1$  is hydrogen and  $R_2$  and  $R_3$  are arylalkyl and wherein A is  $R_6-C(O)-NH-CH(R_5)-C(O)-$  wherein  $R_5$  is arylalkyl and  $R_6$  is  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl and B is  $-C(O)-R_6$  wherein  $R_6$  is independently  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl.

6. The compound of Claim 4 wherein  $R_1$  is hydrogen and  $R_2$  and  $R_3$  are arylalkyl and wherein B is  $R_6-C(O)-NH-CH(R_5)-C(O)-$  wherein  $R_5$  is arylalkyl and  $R_6$  is  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl and A is  $-C(O)-R_6$  wherein  $R_6$  is independently  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  or  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl.

7. A compound of the formula:



wherein X is



wherein  $R_1$  is hydrogen, loweralkyl, alkoxyalkyl, thioalkoxyalkyl or alkoxyalkoxyalkyl and  $R_2$  and  $R_3$  are independently selected from arylalkyl, cycloalkylalkyl and (heterocyclic)alkyl;

A and B are independently selected from  $R_6-C(O)-(NH)-(CH(R_5))-C(O)-$  and  $R_6-C(O)-$  wherein at each occurrence  $R_6$  is independently selected from  $R_7-NH-$ ,  $R_7-N(loweralkyl)-$ ,  $R_7-O-$  and  $R_7-S-$  wherein  $R_7$  is (heterocyclic)alkyl and at each occurrence  $R_5$  is independently selected from loweralkyl; or a pharmaceutically acceptable salt, ester or prodrug thereof.

8. (2S,3S,5S)-2-(N-(N-((2-Pyridinyl)methoxycarbonyl)-valinyl)amino)-5-(N-((3-pyridinyl)methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane; or a pharmaceutically acceptable salt, ester or prodrug thereof.

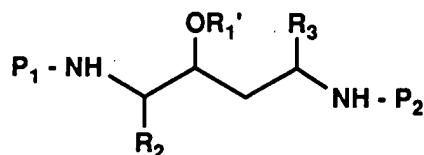
9. (2S,3S,5S)-5-(N-(N-((N-Methyl-N-((2-pyridinyl)-methyl)amino)carbonyl)valinyl)amino)-2-(N-((3-pyridinyl)-methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane; or a pharmaceutically acceptable salt, ester or prodrug thereof.

10. (2S,3S,5S)-2-(N-((3-Pyridinyl)-methoxycarbonyl)amino)-5-(N-(N-((N-Methyl-N-((6-methyl-2-pyridinyl)methyl)-amino)carbonyl)valinyl)amino)-1,6-diphenyl-3-hydroxyhexane; or a pharmaceutically acceptable salt, ester or prodrug thereof.

11. A compound selected from the group consisting of:  
(2S,3S,5S)-2-(N-(N-((N-Methyl-N-((2-pyridinyl)-methyl)amino)carbonyl)valinyl)amino)-5-(N-((3-pyridinyl)-methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane;  
(2S,3S,5S)-5-(N-(N-((2-Pyridinyl)methoxycarbonyl)-valinyl)amino)-2-(N-((3-pyridinyl)methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane;

(2S,3S,5S)-5-(N-(N-((N-methyl-N-((2-pyridinyl)-methyl)amino)carbonyl)isoleucinyl)amino)-2-(N-((3-pyridinyl)methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane.  
 (2S,3S,5S)-2,5-Di(N-(3-pyridylmethyl)oxy-carbonyl)amino}-3-hydroxy-1,6-diphenylhexane;  
 (2S,3S-5S)-2-(N-(N-((N-Methyl-N-((6-methyl-2-pyridinyl)methyl)amino)carbonyl)valinyl)amino)-5-(N-((3-pyridinyl)-methoxycarbonyl)amino)-1,6-diphenyl-3-hydroxyhexane; and  
 (2S,3S,5S)-2-(N-[(pyridin-3-yl)methoxycarbonyl]amino)-5-(N-[(6-methylpyridin-2-yl)methoxycarbonyl-valyllamino)-1,6-diphenyl-3-hydroxyhexane;  
 or a pharmaceutically acceptable salt, ester or prodrug thereof.

12. A compound of the formula:



wherein P<sub>1</sub> and P<sub>2</sub> are independently selected from hydrogen and an N-protecting group; R<sub>1</sub>' is hydrogen, loweralkyl, alkoxyalkyl or an O-protecting group; and R<sub>2</sub> and R<sub>3</sub> are independently -((R<sub>0</sub>)<sub>d</sub>-R<sub>5</sub>) wherein at each occurrence R<sub>0</sub> is independently selected from -(CH<sub>2</sub>R<sub>4</sub>)- and loweralkenylene wherein at each occurrence d is independently selected from 0 and 1, at each occurrence R<sub>4</sub> is independently selected from -S-, -O-, -NH-, -N(loweralkyl)-, -S(O)-, -S(O)<sub>2</sub>- and -CH<sub>2</sub>- and at each occurrence R<sub>5</sub> is independently selected from (i) loweralkyl, (ii) aryl, (iii) thioalkoxyalkyl,



(iv) (aryl)alkyl, (v) cycloalkyl, (vi) cycloalkylalkyl, (vii) hydroxyalkyl, (viii) alkoxyalkyl, (ix) aryloxyalkyl, (x) haloalkyl, (xi) carboxyalkyl, (xii) alkoxycarbonyl-alkyl, (xiii) aminoalkyl, (xiv) (N-protected)aminoalkyl, (xv) alkylaminoalkyl, (xvi) ((N-protected)(alkyl)amino)-alkyl, (xvii) dialkylaminoalkyl, (xviii) guanidinoalkyl, (xix) loweralkenyl, (xx) heterocyclic, (xxi) (heterocyclic)alkyl, (xxii) hydrogen, (xxiii) arylthioalkyl, (xxiv) arylsulfonylalkyl, (xxv) (heterocyclic)thioalkyl, (xxvi) (heterocyclic)-sulfonylalkyl, (xxvii) (heterocyclic)oxyalkyl, (xxviii) arylalkoxyalkyl, (xxix) arylthioalkoxyalkyl, (xxx) arylalkylsulfonylalkyl, (xxxi) (heterocyclic)-alkoxyalkyl, (xxxii) (heterocyclic)thioalkoxyalkyl, (xxxiii) (heterocyclic)alkylsulfonylalkyl, (xxxiv) cycloalkyloxyalkyl, (xxxv) cycloalkylthioalkyl, (xxxvi) cycloalkylsulfonylalkyl, (xxxvii) cycloalkyl-alkoxyalkyl, (xxxviii) cycloalkylthioalkoxyalkyl, (xxxix) cycloalkylalkylsulfonylalkyl, (xl) aminocarbonyl, (xli) alkylaminocarbonyl, (xlii) dialkylaminocarbonyl, (xliiii) aroylalkyl, (xliv) (heterocyclic)carbonylalkyl, (xlv) polyhydroxyalkyl, (xlvi) aminocarbonylalkyl, (xlvii) alkylaminocarbonylalkyl and (xlviii) dialkylaminocarbonylalkyl; or a salt or ester thereof.

13. The compound of Claim 12 wherein R<sub>2</sub> and R<sub>3</sub> are benzyl.

14. A method for inhibiting HIV protease comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 1.

15. A method for treating an HIV infection comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 1.

16. A pharmaceutical composition for treating an HIV infection comprising a pharmaceutical carrier and a therapeutically effective amount of a compound of Claim 1.

17. A method for inhibiting HIV protease comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 8.

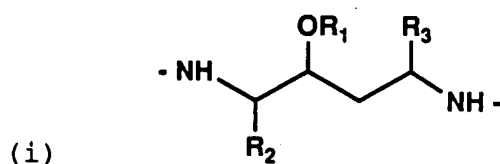
18. A method for treating an HIV infection comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound of Claim 8.

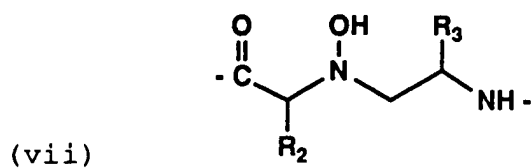
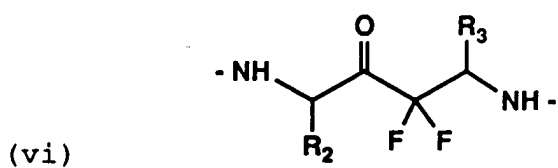
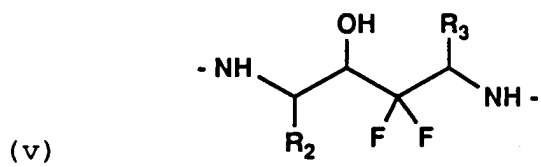
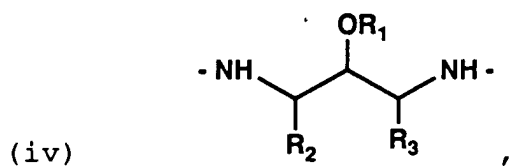
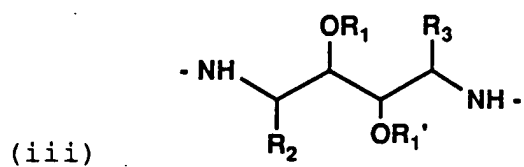
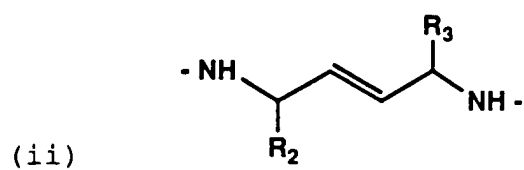
19. A pharmaceutical composition for treating an HIV infection comprising a pharmaceutical carrier and a therapeutically effective amount of a compound of Claim 8.

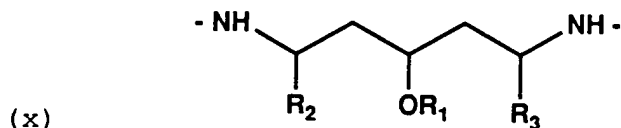
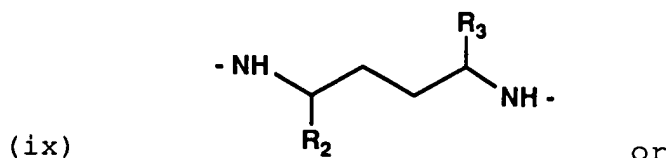
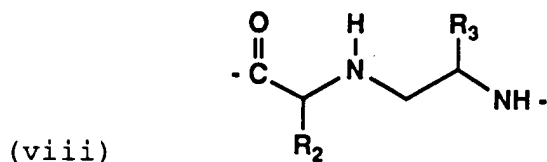
20. A compound of the formula:



wherein X is







wherein  $\text{R}_1$  and  $\text{R}_1'$  are independently selected from hydrogen, loweralkyl, alkoxyalkyl, thioalkoxyalkyl and alkoxyalkoxyalkyl or  $\text{R}_1$  and  $\text{R}_1'$  and the oxygen atoms to which they are bonded taken together are  $-\text{O}-\text{C}(\text{O})-\text{O}-$  or  $-\text{O}-\text{C}(\text{S})-\text{O}-$  and  $\text{R}_2$  and  $\text{R}_3$  are independently  $-(\text{R}_0)_d-\text{R}_5$  wherein at each occurrence  $\text{R}_0$  is independently selected from  $-(\text{CH}_2\text{R}_4)-$  and loweralkenylene wherein at each occurrence  $d$  is independently selected from 0 and 1, at each occurrence  $\text{R}_4$  is independently selected from  $-\text{S}-$ ,  $-\text{O}-$ ,  $-\text{NH}-$ ,  $-\text{N}(\text{loweralkyl})-$ ,  $-\text{S}(\text{O})-$ ,  $-\text{S}(\text{O})_2-$  and  $-\text{CH}_2-$  and at each occurrence  $\text{R}_5$  and  $\text{R}_5^*$  are independently selected from

- (i) loweralkyl,
- (ii) aryl,
- (iii) thioalkoxyalkyl
- (iv) (aryl)alkyl,
- (v) cycloalkyl,
- (vi) cycloalkylalkyl,
- (vii) hydroxyalkyl,

- (viii) alkoxyalkyl,
- (ix) aryloxyalkyl,
- (x) haloalkyl,
- (xi) carboxyalkyl,
- (xii) alkoxycarbonylalkyl,
- (xiii) aminoalkyl,
- (xiv) (N-protected)aminoalkyl,
- (xv) alkylaminoalkyl,
- (xvi) ((N-protected) (alkyl) amino) alkyl,
- (xvii) dialkylaminoalkyl,
- (xviii) guanidinoalkyl,
- (xix) loweralkenyl,
- (xx) heterocyclic,
- (xxi) (heterocyclic)alkyl,
- (xxii) hydrogen,
- (xxiii) arylthioalkyl,
- (xxiv) arylsulfonylalkyl,
- (xxv) (heterocyclic)thioalkyl,
- (xxvi) (heterocyclic)sulfonylalkyl,
- (xxvii) (heterocyclic)oxyalkyl,
- (xxviii) arylalkoxyalkyl,
- (xxix) arylthioalkoxyalkyl,
- (xxx) arylalkylsulfonylalkyl,
- (xxxi) (heterocyclic)alkoxyalkyl,
- (xxxii) (heterocyclic)thioalkoxyalkyl,
- (xxxiii) (heterocyclic)alkylsulfonylalkyl,
- (xxxiv) cycloalkyloxyalkyl,
- (xxxv) cycloalkylthioalkyl,
- (xxxvi) cycloalkylsulfonylalkyl,
- (xxxvii) cycloalkylalkoxyalkyl,
- xxxviii cycloalkylthioalkoxyalkyl,
- (xxxix) cycloalkylalkylsulfonylalkyl,
- (xl) aminocarbonyl,

- (xli) alkylaminocarbonyl,
- (xlii) dialkylaminocarbonyl,
- (xliii) aroylalkyl,
- (xliv) (heterocyclic)carbonylalkyl,
- (xlv) polyhydroxyalkyl,
- (xlvi) aminocarbonylalkyl,
- (xlvii) alkylaminocarbonylalkyl and
- (xlviii) dialkylaminocarbonylalkyl;

A and B are independently selected from

(1) Z-W-

wherein at each occurrence W is absent or represents a peptide chain containing 1-3 amino acids wherein and at each occurrence Z is  $R_6-(C(R_5^*)(R_5))_e-(C(T))_f-(C(R_5^*)(R_5))_g-(U)_i-(C(R_5^*)(R_5))_j-C(T)_f-$  wherein at each occurrence  $R_6-(C(R_5^*)(R_5))_e-(C(T))_f-(C(R_5^*)(R_5))_g-(U)_i-(C(R_5^*)(R_5))_j-C(T)_f-$  is bonded to the amino terminus of the peptide chain, at each occurrence T is independently selected from O and S, at each occurrence  $R_5$  and  $R_5^*$  are independently defined as above or  $R_5$ ,  $R_5^*$  and the carbon atom to which they are bonded taken together form a carbocyclic ring of from 3 to 8 carbon atoms which can be optionally substituted with a loweralkyl group or when e, g or j is 2 or more,  $R_5$  and  $R_5^*$  on adjacent carbon atoms when taken together form a carbocyclic ring of from 3 to 8 carbon atoms which can be optionally substituted with a loweralkyl group, at each occurrence U is independently selected from O, S and  $-N(R_5)-$  wherein  $R_5$  is independently defined as above, at each occurrence e is independently selected from 0, 1, 2 and 3, at each occurrence f is independently selected from 0 and 1, at each occurrence g is independently selected from 0, 1, 2 and 3, at each occurrence i is independently selected from 0 and 1, at each

occurrence  $j$  is independently selected from 0, 1, 2 and 3, and at each occurrence  $R_6$  is independently selected from

(a)  $R_7-(R_9)_k-$  wherein at each occurrence  $R_9$  is independently selected from  $N(R_7)$ , O and S and at each occurrence  $k$  is independently selected from 0 and 1,

(b)  $(R_7)_2N-O-$ ,

(c)  $R_7S(O)_2N(R_5)-$  and

(d)  $R_{170}R_{171}CH=CH-$  wherein at each occurrence  $R_{171}$  is absent, O, S, NH or  $-N(alkyl)-$  and at each occurrence  $R_{170}$  is aryl or heterocyclic and wherein at each occurrence  $R_5$  is independently defined as above and at each occurrence  $R_7$  is independently selected from:

- (i) hydrogen,
- (ii) loweralkyl,
- (iii) cycloalkyl,
- (iv) aryl,
- (v) arylalkyl,
- (vi) (aryl)alkoxyalkyl,
- (vii) aminoalkyl,
- (viii) N-protected-aminoalkyl,
- (ix) alkylaminoalkyl,
- (x) (N-protected) (alkyl)aminoalkyl,
- (xi) dialkylaminoalkyl,
- (xii) carboxyalkoxyalkyl,
- (xiii) (alkoxycarbonyl)alkoxyalkyl,
- (xiv) carboxyalkyl,
- (xv) alkoxycarbonylalkyl,
- (xvi) (amino)carboxyalkyl,
- (xvii) ((N-protected) amino)carboxyalkyl,
- (xviii) (alkylamino)carboxyalkyl,
- (xix) ((N-protected) alkylamino)carboxy-alkyl,

- (xx) (dialkylamino) carboxyalkyl,
- (xxi) (amino) alkoxy carbonyl alkyl,
- (xxii) ((N-protected) amino) alkoxy carbonyl-  
alkyl,
- (xxiii) (alkylamino) alkoxy carbonyl alkyl,
- (xxiv) ((N-protected) alkylamino) alkoxy-  
carbonyl alkyl,
- (xxv) (dialkylamino) alkoxy carbonyl alkyl,
- (xxvi) aminocycloalkyl,
- (xxvii) alkoxyalkyl,
- (xxviii) (polyalkoxy) alkyl,
- (xxix) heterocyclic,
- (xxx) (heterocyclic) alkyl,
- (xxxi) (hydroxyamino) alkyl,
- (xxxii) (alkoxyamino) alkyl,
- (xxxiii) N-protecting group,
- (xxxiv) cycloalkyl alkyl,
- (xxxv) loweralkenyl,
- (xxxvi) hydroxyalkyl,
- (xxxvii) dihydroxyalkyl,
- (xxxviii) (alkoxy) (alkyl) aminoalkyl,
- (xxxix) alkylaminocycloalkyl,
- (lx) dialkylaminocycloalkyl,
- (lxi) polyhydroxyalkyl,
- (lxii) aryloxyalkyl,
- (lxiii) arylthioalkyl,
- (lxiv) arylsulfonylalkyl,
- (lxv) (heterocyclic) thioalkyl,
- (lxvi) (heterocyclic) sulfonylalkyl,
- (lxvii) (heterocyclic) oxyalkyl,
- (lxviii) arylalkoxyalkyl,
- (lxix) arylthioalkoxyalkyl,
- (lxx) arylalkylsulfonylalkyl,

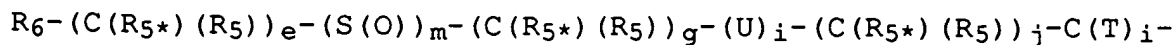


(lxxi)	(heterocyclic)alkoxyalkyl,
(lxxii)	(heterocyclic)thioalkoxyalkyl,
(lxxiii)	(heterocyclic)alkylsulfonylalkyl,
(lxxiv)	cycloalkyloxyalkyl,
(lxxv)	cycloalkylthioalkyl,
(lxxvi)	cycloalkylsulfonylalkyl,
(lxxvii)	cycloalkylalkoxyalkyl,
(lxxviii)	cycloalkylthioalkoxyalkyl,
(lxxix)	cycloalkylalkylsulfonylalkyl,
(lxxx)	aroylalkyl,
(lxxxii)	(heterocyclic)carbonylalkyl,
(lxxxiii)	(aryl)aminoalkyl,
(lxxxiiii)	(aryl)(alkyl)aminoalkyl,
(lxxxv)	(arylalkyl)aminoalkyl,
(lxxxvi)	(arylalkyl)(alkyl)aminoalkyl,
(lxxxvii)	(heterocyclic)aminoalkyl,
(lxxxviii)	(heterocyclic)(alkyl)aminoalkyl,
(lxxxix)	((heterocyclic)alkyl)alkylaminoalkyl
(xc)	(alkoxyalkyl)aminoalkyl,
(xci)	thioalkoxyalkyl,
(xcii)	mercaptoalkyl,
(xciii)	aminocarbonylalkyl,
(xciv)	alkylaminocarbonylalkyl and
(xcv)	dialkylaminocarbonylalkyl;

and

(2) Z'-W'-

wherein at each occurrence W' is absent or represents a peptide chain containing 1-3 amino acids and wherein at each occurrence Z' is



wherein  $R_6-(C(R_5^*)(R_5))_e-(S(O))_m-(C(R_5^*)(R_5))_g-(U)_i-$   
 $(C(R_5^*)(R_5))_j-C(T)_i-$  is bonded to the amino terminus of the  
peptide chain wherein at each occurrence T is independently  
selected from O and S, at each occurrence  $R_5$  and  $R_5^*$  are  
independently defined as above or  $R_5$ ,  $R_5^*$  and the carbon atom  
to which they are bonded taken together form a carbocyclic  
ring of from 3 to 8 carbon atoms which can be optionally  
substituted with a loweralkyl group or when e, g or j is 2 or  
more,  $R_5$  and  $R_5^*$  on adjacent carbon atoms when taken together  
form a carbocyclic ring of from 3 to 8 carbon atoms which can  
be optionally substituted with a loweralkyl group, at each  
occurrence U is independently selected from O, S and  $-N(R_5)-$   
wherein  $R_5$  is independently defined as above, at each  
occurrence e is independently selected from 0, 1, 2 and 3, at  
each occurrence m is independently selected from 1 and 2, at  
each occurrence g is independently selected from 0, 1, 2 and  
3, at each occurrence i is independently selected from 0 and  
1, at each occurrence j is independently selected from 0, 1,  
2 and 3, and at each occurrence  $R_6$  is independently defined  
as above; or a pharmaceutically acceptable salt, prodrug or  
ester thereof.